

HARRIS'S SPARROW IN ITS WINTER RANGE*

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This paper presents the results of an investigation of the plumage changes and the behavior of Harris's Sparrow, *Zonotrichia querula* (Nuttall), in its winter range. The study, carried on at Stillwater, Oklahoma, has been a continuation of work done in the same locality during the winter of 1934-35 by Park (1936). Since Stillwater is near the center of the bird's winter range, findings here may be regarded as typical.

Swenk and Stevens (1929), with the aid of several coöperators along the migratory route, thoroughly investigated the general distribution, migration, habitat, food, voice, size, behavior, plumage, and molts of Harris's Sparrow in north central United States. Nice (1931) studied this sparrow in central Oklahoma, her work consisting principally of field observations and a study of four banded birds. The plumage, habitat, song, and behavior were studied. Park (1936) banded birds in the vicinity of Stillwater and studied the behavior of this sparrow in its winter range.

MATERIALS AND METHODS

The traps used for catching Harris's Sparrow in this vicinity were constructed according to the specifications of Lincoln and Baldwin (1929:18). Two traps, designated A and E, built upon weathered wood frames, were suspended, by wire from branches of trees, three or four feet from the ground. A third trap, C, was placed upon a frame covered by screen wire; which was strewn with dirt, leaves, and sticks in order to represent the ground. The traps were set in places where Harris's Sparrows had been observed in abundance. Trap A at Station A, was set on a tributary of Stillwater Creek about three-fourths mile west of Stillwater in a clump of bushes (Fig. 15). The trap was well sheltered and covered by vines, mostly smilax and wild grape. The second trap (Station C), located on another tributary of Stillwater Creek two and one-eighth miles directly south of Station A, was placed in a thicket containing a few large trees. The third trap (Station E), also on a tributary of Stillwater Creek one mile north and three-fourths mile west of Station A, was well sheltered in a wooded valley with hills to the north and south. Bait consisting of corn, wheat, and smaller grains was spread over the platform inside and outside the traps.

*Contribution from the Zoological Laboratory of the Oklahoma Agricultural and Mechanical College, prepared under the direction of G. A. Moore.

Field observations began on October 1, 1935, and continued, with frequent visits, until the first arrivals were seen at Station A on October 22 at 5:45 P. M. Accordingly on October 23 a trap was set. On October 24, a trap was placed at Station C and on November 10, another trap was set at E. The one placed at Station E was new and it was feared that it might frighten the birds, but apparently this did not occur because the first eleven Harris's Sparrows were banded here.

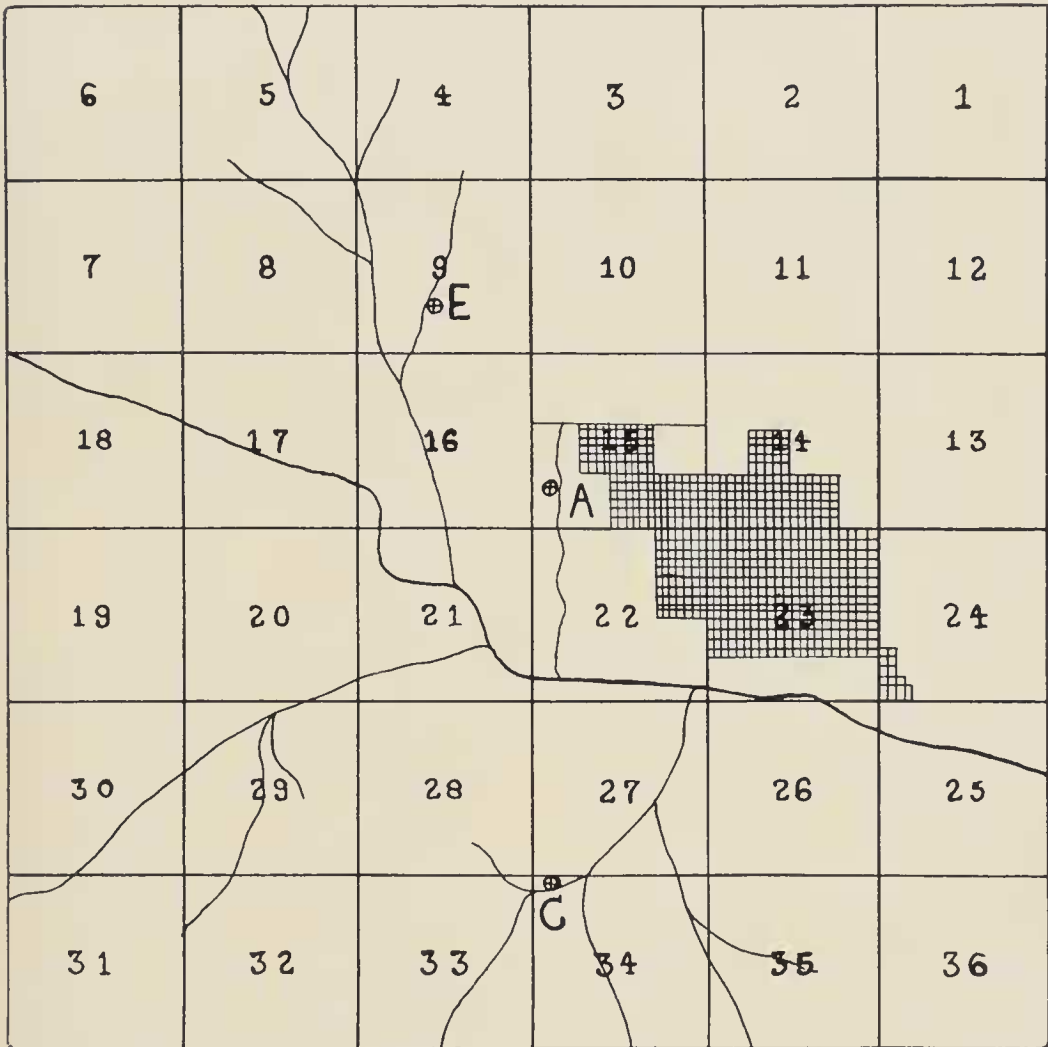


FIG. 15. Map of the region in the vicinity of Stillwater, showing the location of the traps referred to in this paper.

The visits to the traps were made daily a little before nightfall. Care was taken in approaching the traps and in handling the birds to avoid frightening them unduly. Pictures were taken with an Eastman Kodak (116 Brownie), with portrait attachment, at a distance of two feet six inches. Split-ring bands, size 1A, were furnished by the Bureau of Biological Survey, U. S. D. A. These birds were held during banding according to instructions given by Lincoln and Baldwin (1929:90).

RESULTS

The largest numbers were caught in November and April, while February had the fewest. Doubtless the birds were traveling southward in November and returning to their summer range in April. February, March, and the first few days of April yielded very few new birds. Low temperatures and rainy weather account for the spring return being delayed until the middle and latter part of April when more clement weather prevailed. December, being mild, ran high in "returns"; only twelve new sparrows were caught but thirty-eight different individuals returned. January yielded a small number of new birds and a decrease in the number of returns. February showed a decline in new birds and returns. March gained slightly in new birds and greatly in returns. April showed a wave of migration higher than any of the other months. Harris's Sparrows banded during the season 1935-36 were as follows:

	Adult	Immature
November	17	13
December	6	6
January	10	6
February	1	4
March	9	2
April	18	3
Total	61	34

The limited data collected indicate that Harris's Sparrow follows the same migratory route every year since five birds banded by Park in 1934-35 returned in 1935-36 to their original banding station. No. 169108 arrived at Station A on November 20, 1934, and apparently stayed in that locality until December 7, 1934, since it was caught seven times during that period. On November 21, 1935, this same bird arrived at Station A with no change in plumage. No. 169107, caught at Station A on November 20, 1934, returned once between that date and December 8, 1934, and returned again to Station A a year later, on December 9, 1935, and again on January 20, 1936. No. 169386, caught at Station A on April 6, 1935, returned to the same place on December 9, 1935. No. 169254, caught at Station C on March 5, 1935, returned to that station on January 25, 1936. No. 169170, banded at Station C on February 16, 1935, returned six times that year and again on January 29, 1936.

It is evident that small groups may remain intact for considerable time and follow the same route in the spring as in the fall. Thirteen groups of two birds each returned more than two times. Six groups of more than two birds each returned more than two times.

The length of time that the birds remain in a locality, in the winter range, varies. Judging from the number of times caught, some may stay for only a short time, while others with the "trap habit", remain for a longer period. No. 169338, caught on November 20, 1935, returned occasionally throughout the winter and spring, excluding January, until April 23. It was caught fifteen times. From November 21 until December 8, 1935, No. 169343 was caught seven times, and returned again on February 19, 1936. No. 169349 stayed approximately one month, from November 21 to December 18, 1935, and was caught five times. The average time for each in a particular locality is about ten days and the extremes are about one day and three months.

A few interesting observations follow: No. 169330, caught at Station A, and released in Stillwater on November 18, 1935, returned in a few days. This same bird, evidently with the "trap habit", when again released in town returned to the trap in two days. No. 169338 was habitually returning to Station E and having been caught eleven times was released at Station A on March 9 and returned to Station E on March 12. No. 169349 had been caught four times at Station A and when liberated December 17, 1935, returned immediately to the trap and started eating grain. It was carried to Station E and released, as further test, but the next day the bird was in the trap at Station A. It is interesting to note that birds caught at one station and freed at another were never caught at the latter. In fact, they either returned to the station where originally caught or disappeared. Since traps C and E were within a radius of two miles of Station A, and no bird was caught at more than one trap, the stopping places of each bird must be well localized. They do not appear to roam extensively while in a particular locality.

Immature birds, upon their arrival in the fall, were somewhat variable in coloration. The crowns were often black centrally with margins of gray or mingled black and white. The checks were gray-buff, the postauricular spots varied from light brown to brown, the chins and throats were white somewhat mottled with black, while the breasts were mottled black and white.

The adults in the fall had black crowns (sometimes varied by lateral margins of a few white and buffy feathers), gray-buff cheeks, and brown postauricular spots. The black of the throats and chins varied in intensity and the chests, though much blacker than in immature birds, were mottled. These markings remained, as typical, until the spring molt, first signs of which were observed March 12, 1936. During the next two weeks signs of molting became more and more notice-

able, and birds that remained away from the trap for several days returned changed. The birds did not all molt at one time for No. 106323, caught March 12, 16, and 17 did not start until March 20. Likewise No. 169334, first caught on November 19, 1935, and later on March 1 and 16, showed no signs of molting until again caught on March 28. No. 169338 (adult) not molting on March 1 and April 16, when caught on April 22 was molting, for the cheeks had changed from buffy to a solid gray and the black was more extensive and intense. No. 169357 had not molted when caught on February 19, but on March 14, change was evident. No. 169375 (adult) first caught December 16, 1935, when caught again March 16, 1936, had already undergone a partial molt changing the crown from black with gray bars to solid black to the nape. The chin was already black, the neck and upper breast had turned to solid glossy black while the cheeks were still brownish gray. This bird was not caught again.

Pictures taken before and after molting show the changed appearance of the chin, throat, and chest. No. 106320, taken on March 6, 1936, had not started to molt. The crown was barred black, white, and brown, with black dominant; cheeks gray-buff; postauricular spots light brown; chin black; throat black and white; chest black with brown and white spots. On April 22, 1936, this bird returned and had changed to the typical black hood, gray cheeks, and dark brown postauricular spots.

As a contrast, No. 169338 arrived at Station E on November 20, 1935, and constantly returned every few days. It was plainly an adult but had one white spot in the center of the crown. The cheeks were gray-buff, the postauricular spots brown, the chin black, the throat black with white laterally, and the chest mottled black and white. Taken again on April 6, it showed no great change, but on April 22 there was a distinct change in the markings. The white crown spot was gone and the bird had donned its black hood.

No. 106323 first taken on March 12, 1936, at Station A, consistently returned and on March 20 was molting. At the time the first picture was taken the crown was barred black, gray, and buff. The cheek was grayish-buff and the postauricular spot brown. The chin had just a streak of black beneath the beak which extended in a fine line on each side of the white throat. The chest was mottled black and white. On March 31, the throat was blacker and the cheek was becoming somewhat gray. April 2 the crown was black in the center and laterally barred black, gray, and buff. The cheeks, chin, and postauricular spots had not changed; the chin was black, and the throat had

a black central stripe reaching from the chin to the chest. On each side of the throat, the feathers were white. This bird had been classified as immature.

An adult bird, No. 169357, arrived at Station E on November 27, 1935. The crown was black in front and barred posteriorly with black and gray. The cheek was gray-buff; postauricular spot brown; chin, throat, and chest mottled black and white. On March 14, the bird had its black hood and the cheeks and postauricular spots were unchanged.

No. 106310 arrived at Station C on January 27, 1936. The chin, throat, and chest were mottled black and gray; the crown was brownish-gray, the cheek grayish-buff, and the postauricular spot brown. On April 6, it returned to the same station with crown, cheek, and postauricular spot unchanged, the chin and throat black, and the chest mottled black and gray.

Many birds were caught for the first time after the molting period was over. In fact, all birds caught after April 17, 1936, except the immature individuals, had black hoods, gray cheeks, dark brown postauricular spots, and mottled black and white chests.

Nice (1931) states that about one-tenth to one-twentieth of the birds have the black hoods in the autumn but all assume it by late April. In this trapping locality, the autumn records show that 63 per cent in 1934 and 40 per cent in 1935 of the birds trapped were immature (no black hood). Not all of the birds had assumed the black hood in late April, since in April, 1935, only 54 per cent had black hoods and in April, 1936, 82 per cent. (See table).

Although Harris's Sparrows did not seem to be extremely frightened by the operator opening the traps, they did appear to be frightened when the traps were visited by some disturbants. On January 22, 1936, when the trap was visited at Station E, no Harris's Sparrows were caught but a number of them were noticed in the bushes. Near the trap approximately fifty boys were playing ball, taking pictures of the trap, and tramping down the bushes. No more birds were caught here until February 19.

March 20, 1936, a large cat was found at Station A and the trap had been somewhat battered. There were two Harris's Sparrows in the inner chamber, frightened but otherwise unharmed. No birds returned to this trap until March 31.

On April 1, 1936, a squirrel was taken from the trap at Station E. Blood, feathers, and hair were in the inner chamber. Although the trap was thoroughly cleaned no birds returned until April 17.

The presence of such disturbants must leave a marked impression at the trap. The cat and squirrel may have frightened the birds away and, by their tampering with the traps and feed, may have induced fear. On April 28, 1936, No. 106332 was killed and eaten by an unknown animal in the trap at Station E. Before this time many birds had been caught here but no more were seen or taken at this trap after that date.

CONCLUSIONS

1. Harris's Sparrows, in their migration, follow the same route year after year. In following this route, they stop at certain points for food, and linger for from one to thirty days (average ten). Banded returns indicate that the birds stop at the same places in the spring as in the fall.

2. Harris's Sparrows enter the traps often in groups of two or three and these groups often return to the traps together.

3. The molting period begins about the middle of March and continues until the middle of April. The molt is accompanied by a change in plumage typical to the age of the individual bird. The outstanding changes occur in the regions of the crown, cheeks, postauricular spots, chin, throat, and chest. The adult changes were: Cheeks gray-buff to a uniform gray or slate gray; postauricular spots light brown to dark brown; crown, chin, and throat to a uniform black hood. The immature birds remained the same in the cheeks and postauricular spots but darkened somewhat in the other parts mentioned. As a whole, in the spring, the immature Harris's Sparrow is about 50 per cent darker on the crown, chin, throat, and chest than in the fall.

4. Harris's Sparrow may be frightened away from a given locality for a period of several days by some unusual commotion.

5. Harris's Sparrow shows a marked homing instinct. While stopping in a particular locality, they do not roam far from that vicinity.

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